Supplementary Information (SI)

Table S1. Distribution of population, number of households and average household size by County

County	Land Area (km^2)	Population	Population density ($No.km^{-2}$)	Number of Households	Average number of people per household
Bomet	2 530.9	875 689	346	187 641	4.7
Narok	17 950.3	1 157 873	65	241 125	4.8

Data obtained from the Kenya National Bureau of Statistics (KNBS), 2019. Kenya Population and Housing Census, Volume I: Population by County and Sub-County. ISBN: 978-9966-102-09-6. Website: http://www.knbs.or.ke Kenya National Bureau of Statistics P.O. Box 30266-00100 Nairobi.

Table S2. Calculated toxic equivalents (TEQs in µg/m^3) for PAHs released into the gaseous phase by cooking devices.

PAHs	[a]TEFs	Conc. (µg/m^3) (3-stone)	Conc. (µg/m^3) (Improved 3-stone)	Conc. (µg/m^3) (Jiko)	Conc. (µg/m^3) (Kerosene stove)	TEQ (3-stone)	TEQ (Improved 3-stone)	TEQ (Jiko)	TEQ (Kerosene stove)
Nap	0.001	49.39	3.16	7.90	54.49	0.049	0.0032	0.0079	0.054
Acy	0.001	15.19	0.49	1.24	5.17	0.015	0.00049	0.0012	0.0052
Ace	0.001	0.15	0.51	0.18	1.48	0.00015	0.00051	0.00018	0.0015
Flu	0.001	2.89		1.14	1.47	0.0029		0.0011	0.0015
Phe	0.001	2.49				0.0025			
BghiP	0.01				5.56				0.056
DahA	5	0.58	1.52	1.97	0.69	2.92	7.60	9.86	3.44
ΣPAHs		**70.69**	**5.69**	**12.43**	**68.85**				
ΣTEQ						**2.99**	**7.61**	**9.87**	**3.56**

[a]TEF = Toxic Equivalency Factors proposed by Nisbet & Lagoy (1992)

ΣPAHs = Sum of average PAH concentrations released by different cooking devices in households

ΣTEQ = Total average toxic equivalent concentrations from different combustion device (TEQ=TEF x conc.).

Table S3. PAH concentrations in μg/m^3 in indoor and ambient air from rural and urban areas in Bomet and Narok Counties of Kenya (average of triplicate extract injections). Field blank corrections were per sample set (BR; BU; NR and NU, respectively). LOQs are included where [analyte] < LOQ.

RURAL SAMPLES

	BR-H1A	**BR-H1B**	**BR-H1C**	**BR-H1D**	**BR-AMB**	**NR-H1**	**NR-H2**	**NR-H3**	**NR-AMB**
Nap	5.32	0.32	6.27	4.71	0.32	27.67	1.48	120.18	0.32
Acy	0.62	0.18	0.18	0.63		6.16	0.18	39.21	
Ace	1.092	0.12	0.12	0.12		0.20	0.12	0.12	0.26
Flu	0.482	2.31	0.48	3.38		1.34	0.48	6.86	
Phe						0.18	0.18	7.12	
DahA	2.13	0.20	5.34	2.36	2.12	0.33	0.51	0.20	0.68

URBAN SAMPLES

	BU-H1A	**BU-H1B**	**BU-H1C**	**BU-AMB**	**NU-H1A**	**NU-H1B**	**NU-H2A**	**NU-H2B**	**MMU-A**	**MMU-B**	**NU-AMB**
Nap	1.43	2.74	0.32	3.99	0.32	108.66	0.32	32.99	6.76	10.35	
Acy	0.18	0.68	0.18		0.87	9.47	0.18	5.70	2.75	0.11	
Ace	0.32	0.12	0.12	0.22	0.12	2.83	0.12	0.12	0.60	0.12	0.12
Flu					0.48	2.46	0.48	1.03	0.48	0.48	
Phe											
Ant											
FluAn											
Pyr											
BaA											
Chr											
BkF											
BaP											
IcdP											
BghiP					1.64	9.48	1.64	1.64	1.64	1.64	
DahA	2.23	0.20	0.20	2.10	1.18	0.20	1.22	0.20	6.78	0.20	6.16

Note: The Narok Urban field blank was lost during analysis, thus an average of the [PAH] from the other three field blanks was used for sample (NU) correction purposes.

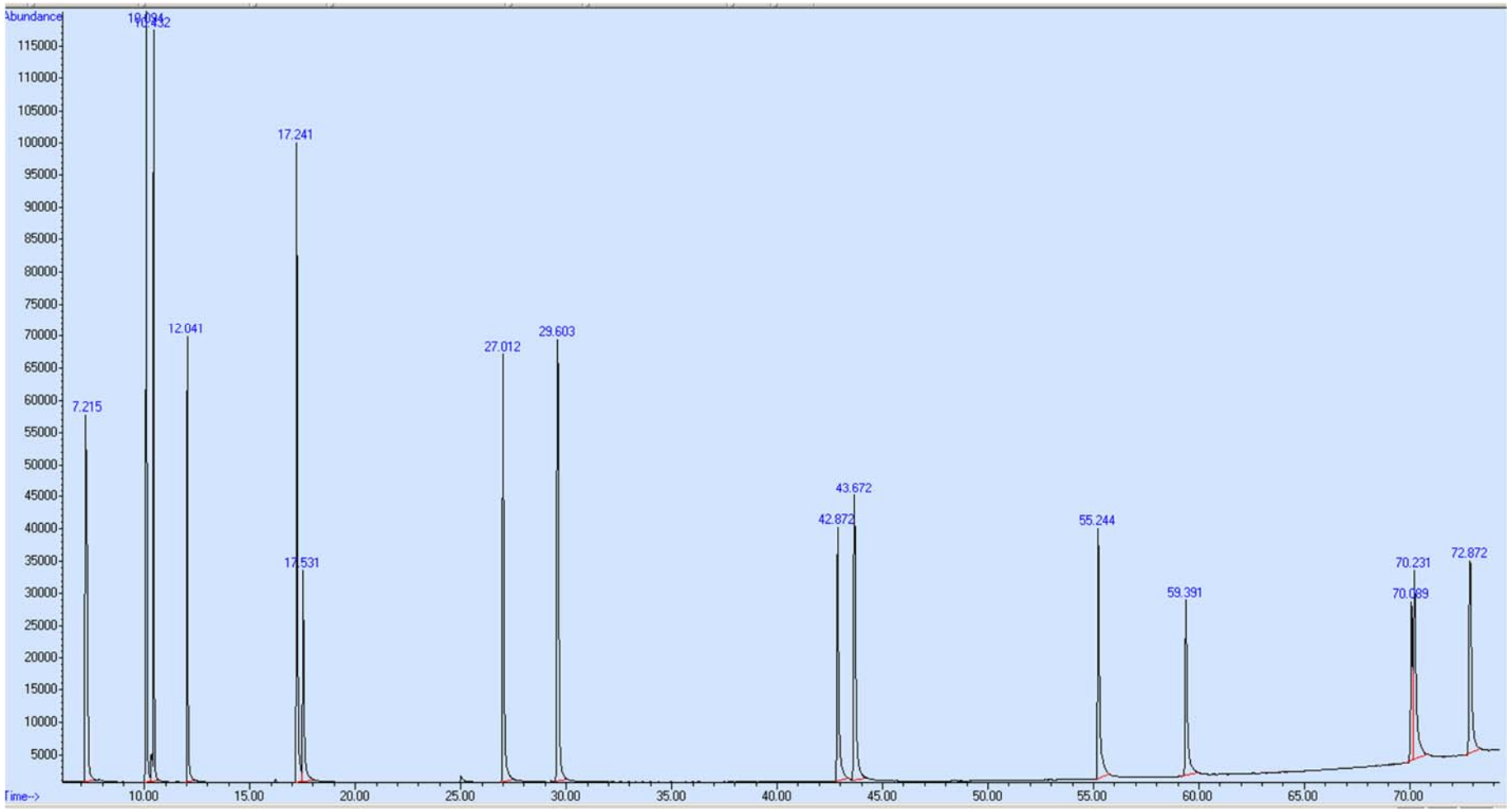

Figure S1. *Representative SIM (Table 2) chromatogram of a 200 ng/µL PAH mix standard (containing the 15 priority PAHs) spiked onto a PDMS trap prior to PASE extraction. The well resolved PAH peaks shown represent 2 ng PAH (200 ng/100 µL extract after PASE) injected onto the GC column.*

Figure S2. *Typical improved 3-stone stove molded with bricks and cement.*

Figure S3. *Typical rural and urban kitchens in the study areas (A) urban kitchen (B) rural kitchen found inside a manyata.*

Figure S4. *Typical rural kitchens in the study areas (A) Narok county (poorly ventilated) (B) Bomet kitchen (better ventilated).*

Figure S5. *Collection of ambient air samples by the untarred roadside (sampling trap was held at 100 cm above the ground).*